

## Separation in the field of White-fronted and Grey-fronted Doves **(*Leptotila verreauxi* and *Leptotila rufaxilla*)**

by

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### Introduction

Among neotropical pigeons and doves, *Leptotila* as a group, are easily identified. General habits and external appearance clearly separate this genus from other similar American Columbidae, such as pigeons (*Columba*), ground doves (*Columbigallina* = *Columbina*) and quail doves (*Geotrygon*), although *Leptotila* seem to be most closely related to this latter genus of neotropical doves.

Inter-specific relationships within this group of doves, has been up-dated and discussed by Goodwin (1977), who divided the genus into three sub-groups: *L. verreauxi* and *L. megalura*; *L. rufaxilla*, *L. plumbeiceps*, *L. pallida*, *L. wellsi* and *L. jamaicensis*; *L. cassini*, *L. ochraceiventris* and *L. conoveri*. These 10 forms are now usually treated as full species on the present knowledge of their relationships, based upon call analyzations, ecology, breeding and general behaviour. Among the 10 species of the genus, external characters are very similar and colour differences are mostly subtle. Therefore, separation in the field of sympatric *Leptotila* doves is always difficult. Most *Leptotila* except both species under discussion, have a restricted distribution, although the genus is widespread in tropical America, from southern United States in North America throughout Central America and some Caribbean islands to eastern Argentina in South America. However, further information on distribution ranges and habitat are needed to establish the exact limits of possible super-species or to clarify sympatry or allopatry within the entire genus.

This paper presents keys to facilitate separation in the field of *L. verreauxi* and *L. rufaxilla*. Mistnetted doves are identified in the hand without any difficulty. With the keys, observations with 7 × 35 to 10 × 50 binoculars under optimal light conditions and at a reasonable distance, allow to identify correctly both species. Especially incubating or brooding doves make possible an ideal obervation of the most important external characters.

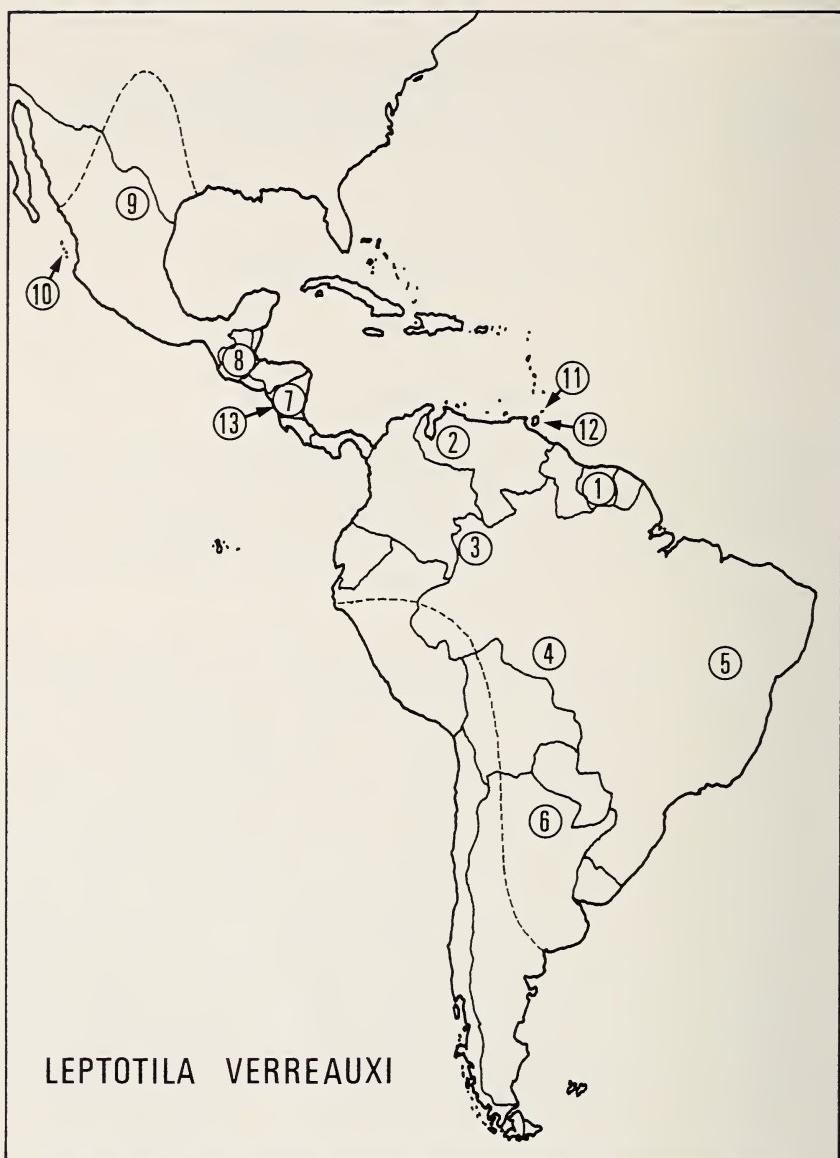


Fig. 1: Range of *Leptotila verreauxi* in North, Central and South America (---: northern and southern limits of distribution). Sub-species are: 1. *brasiliensis*, 2. *verreauxi*, 3. *decolor*, 4. *decipiens*, 5. *approximans*, 6. *chalcauenia*, 7. *bangsi*, 8. *fulviventris*, 9. *angelica*, 10. *capitalis* (Tres Marias Islands), 11. *tobagensis* (Tobago), 12. *zapluta* (Trinidad), 13. *nuttingi* (western shore of Lake Nicaragua and Ometepe Island).



Fig. 2: Range of *Leptotila rufaxilla* in South America (---: western limit of distribution). Sub-species are: 1. *rufaxilla*, 2. *dubusi*, 3. *bahiae*, 4. *reichenbachii*, 5. *pallidipectus*, 6. *hellmayri* (Trinidad and Paria Peninsula, Venezuela).

## White-fronted and Grey-fronted Doves

The White-fronted (or White-tipped) (*L. verreauxi*) and the Grey-fronted (*L. rufaxilla*) Doves belong to two different sub-groups (Goodwin 1977). *L. verreauxi* is found from southern United States in North America throughout Central America to southern Brazil, Uruguay and northern Argentina in South America (fig. 1); *L. rufaxilla* is found in South America, from eastern Colombia to the Guianas and north-eastern Brazil and south to south-eastern Brazil, Paraguay and eastern Argentina (fig. 2).

In the Amazon basin and adjacent areas of South America, they are generally sympatric. Both species are very similar in appearance and behaviour and thus are difficult to identify in the field.

*L. verreauxi* and *L. rufaxilla* are represented respectively by 13 and 6 distinct sub-species (Peters 1937) (fig. 1 and 2). In the Guianas and adjacent parts of Venezuela and Brazil, the species are represented by the sub-species *L. v. brasiliensis* and *L. r. rufaxilla* respectively. They are found in the Guianas and northern Brazil, south to the north bank of the lower Amazon River (*L. v. brasiliensis*) and eastern Venezuela in the lower Orinoco Valley, the Guianas and northern Brazil, south to the Rio Madeira and northern Maranhão (*L. r. rufaxilla*).

## Methods

These notes are based on personal field experience with both *L. v. brasiliensis* and *L. r. rufaxilla* in French Guiana and Surinam, and on data of specimens of all sub-species in the British Museum (Natural History) (Tring, England) and the Rijksmuseum van Natuurlijke Historie (Leiden, Holland).

During three stays, totalling 11 weeks in the field (French Guiana, 24 August–4 September 1974; French Guiana and Surinam, 6 April–5 May 1979; Surinam, 30 March–28 April 1980), one or both *Leptotila* species depending upon the types of habitat visited, were observed several times a day.

In French Guiana, the coastal area along the Route Nationale n° 1, between St. Laurent and Cayenne, was visited. Habitats investigated include overgrown sand ridges, bushy savanna, primary lowland forest and disturbed areas e. g. secondary forest and cultivated land.

In Surinam, the coastal area between New Nickerie and Albina and the nature reserves Brownsberg and Voltzberg, were extensively visited. Habitats investigated include all types of coastal savannas, primary lowland forest, inland rainforest, and disturbed areas in all habitats mentioned e. g. secondary forest and agricultural regions.

The extensive material in the Tring collection allowed a critical comparison of sub-specific differences in colour pattern of both species. In the Leiden collection, recent specimens from Surinam were collected by F. Haverschmidt and G. F. Mees. Numerical data were obtained during field work or are taken from specimen labels in the Leiden collection.

Although hereafter, mainly differences between the two sub-species *L. v. brasiliensis* and *L. r. rufaxilla* are discussed, these differences are generalized to the specific level in a final section.

### Results and discussion

Total body length of both *L. v. brasiliensis* and *L. r. rufaxilla* is approximately 27.5 cm. From data on wing length and weight, the former species seems slightly smaller and lighter than the latter. Wing lengths range from 125 to 137 mm in *L. v. brasiliensis* ( $N=19$ ,  $\bar{x}=129$  mm,  $s=\pm 1$  mm) and from 130 to 145 mm in *L. r. rufaxilla* ( $N=21$ ,  $\bar{x}=138$  mm,  $s=\pm 2$  mm). Weight varies approximately between 119 and 144 g in *L. v. brasiliensis* ( $N=19$ ,  $\bar{x}=127$  g,  $s=\pm 3$  g) and between 132 and 176 g in *L. r. rufaxilla* ( $N=21$ ,  $\bar{x}=153$  g,  $s=\pm 3$  g).

Obviously, body weight and dimensions are of no significant help to identify both doves in the field.

### Habitat

In the coastal area of French Guiana, *L. v. brasiliensis* is rather common, although not abundant. *L. r. rufaxilla* is found occasionally in larger patches of forest in wetter parts of the savanna (Ingels 1976).

In Surinam, both *L. v. brasiliensis* and *L. r. rufaxilla* are common in suitable habitat. The latter species, being more a forest bird, is found regularly in the interior, whereas the former is more common in the coastal region.

*Leptotila* doves are shy, both in French Guiana and Surinam. Being largely terrestrial, they are usually flushed prior to be seen. In general, good observation is possible for foraging and incubating or brooding doves only.

*L. v. brasiliensis* is found generally in semi-arid or arid regions, e. g. in bushy country and pastures, forest edges, open woodlands, wastelands, plantations, orchards and groves and thickets in cultivated areas, while *L. r. rufaxilla* is found almost solely in humid forest. Both species forage on the ground and are seen most often when walking and feeding on the ground or forest floor, alone or in pairs. Thereby they favour man-made paths and roads. Both perch freely in bushes or trees (*L. v. brasiliensis*) or in forest un-

dergrowth and on branches of forest trees (*L. r. rufaxilla*), sometimes at a considerable height.

Normally, Grey-fronted Doves are more forest birds than White-fronted, which avoid the interior of heavy forest, although there is some overlapping where habitat differentiation is difficult or doubtful to make (Haverschmidt 1968, Ingels 1976). Thus an isolated population of *L. v. brasiliensis* was found on a large, almost flat granite outcrop surrounded by undisturbed primary rainforest, in the Voltzberg nature reserve in Surinam.

Although the type of habitat visited may be indicative of what *Leptotila* species can be expected, it forms an unreliable indication.

### Colour pattern

The general colour pattern of both sub-species is very similar. There is no appreciable difference between the entire under parts and upper parts except for forehead, crown, nape and (hind)neck.

#### Forehead

The forehead is whitish pink to vinaceous in *L. v. brasiliensis* and greyish white to almost white in *L. r. rufaxilla*.

#### Crown

The crown is hazel to purplish brown in *L. v. brasiliensis* and bluish grey in *L. r. rufaxilla*.

#### Nape and (hind)neck

These parts are olive brown with a greenish purple sheen in *L. v. brasiliensis* and greyish brown without any sheen in *L. r. rufaxilla*.

Obviously, the predominant colour of the entire upper head is brownish in *L. v. brasiliensis* and greyish in *L. r. rufaxilla*.

Colours of soft parts are rather variable and often hard to describe. However, the colour of the bare orbital and loral skin will prove to be the most reliable and valuable external character to separate both *Leptotila* doves in the field.

#### Orbital and loral skin

These parts are blue to greyish blue in *L. v. brasiliensis* and red to dull red in *L. r. rufaxilla*. Although the colour intensity of the bare skin of lore and eye region varies in different specimens, these soft parts are clearly bluish in the White-fronted and reddish in the Grey-fronted Dove.

These colours are incorrectly shown and described in the text of Haverschmidt (1968) where *L. r. rufaxilla* is thought to have a bluish orbital and loral skin.

#### Bill

The bill is dark horn colour to black in both species.

#### Legs and feet

These soft parts are carmine to wine-red in both species.

#### Irides

The iris is orange in *L. v. brasiliensis* and yellow in *L. r. rufaxilla*. The iris colour is not always very evident, although normally the former species has somewhat darker irides than the latter.

From personal field experience and investigations of museum specimens, it is obvious that most external characters mentioned above are difficult to observe in the field or/and corresponding colour differences difficult to distinguish, and therefore rather unreliable. The colours of upper head and bare orbital and loral skin however, are the definite characters to identify both doves correctly.

### Generalization to the specific level

In the following discussion I consider colour differences of forehead and upper head and the bare loral and eye region, as those characters only are useful in the field to separate *L. verreauxi* and *L. rufaxilla*.

#### Loral and orbital skin

These soft parts are described in field guides covering the neotropical region, to be from light blue to blue and greyish blue, and from dull red to red and dark red, for the different sub-species of *L. verreauxi* and *L. rufaxilla* respectively (Wetmore 1968, Land 1970, ffrench 1973, Peterson & Chalif 1973, Meyer de Schauensee & Phelps 1978).

Throughout the entire range of both species, there is little variation in colour of the bare loral and eye region, thereby proving once more to be the most useful external character to separate both species in the field.

#### Forehead and upper head

##### *L. verreauxi*

The ranges of the three sub-species *L. v. verreauxi*, *L. v. decolor* and *L. v. approximans* surround the distribution area of *L. v. brasiliensis* (fig. 1).

There is no obvious difference in head colour pattern between *L. v. verreauxi* and *L. v. brasiliensis*, although some specimens of the nominate form, have a less pinkish, slightly more whitish forehead. In *L. v. decolor* and *L. v. approximans*, the entire head colour pattern is paler, more greyish than in *L. v. brasiliensis*. These two sub-species clearly lack the warm pinkish to brownish cast of *L. v. brasiliensis* all-over the head.

The northern, i. e. Central and North American sub-species, *L. v. bangsi*, *L. v. fulviventris* and *L. v. angelica* (fig. 1) all have a paler, more whitish forehead than *L. v. brasiliensis*. They too lack the warm pinkish to brownish cast of *L. v. brasiliensis* on forehead and upper head. The entire head colour pattern becomes paler, more whitish, and the colour intensity is dullest in the most northerly sub-species.

A trend towards a less pinkish or brownish, more greyish head colour pattern already visible in *L. v. approximans* and *L. v. decolor*, perseveres in the southern sub-species *L. v. decipiens* and *L. v. chalcauchenia*. Both have a greyer head colour pattern than *L. v. brasiliensis* and the northern sub-species.

To conclude, all other sub-species of *L. verreauxi* except perhaps the nominate form *L. v. verreauxi*, have a paler, less warmly pinkish brown head colour pattern than *L. v. brasiliensis*. Northern sub-species have a more whitish whereas southern sub-species have a more greyish head colour pattern, closer to although still separable from *L. rufaxilla*.

#### *L. rufaxilla*

The northern sub-species *L. r. dubusi* (fig. 2) has a less greyish forehead than the nominate form *L. r. rufaxilla*. The southern sub-species *L. r. bahiae* and *L. r. reichenbachii* (fig. 2) have a similar head colour pattern as *L. r. rufaxilla* although some specimens have a less intensive greyish forehead. The neck colour in both northern and southern sub-species, is more brownish, less greyish than in *L. r. rufaxilla*.

To conclude, all other sub-species have a more whitish, less greyish forehead and a more brownish, less greyish neck than *L. r. rufaxilla*.

In the southern part of their ranges, the head colour pattern of the sub-species of both White-fronted and Grey-fronted Doves resemble most each other. In the Guianas and adjacent areas, the greatest difference in head colour pattern of both species is observed. They are easiest to separate in the field in this part of their distribution area.

### Conclusion

Although the normal habitat where White-fronted and Grey-fronted Doves are found, may be an indication what species can be expected in a given area, these sympatric *Leptotila* species are in general difficult to separate in the field.

In flight, both doves are impossible to identify properly. Mistnetted specimens and those observed at close quarters e. g. on the nest or while foraging, are easily separated by two external characters: the colour of the bare loral and orbital skin and the upper head colour pattern.

The bare lore and eye region is bluish in *L. verreauxi* and reddish in *L. rufaxilla*, and the upper head is pinkish brown in *L. verreauxi* and whitish grey in *L. rufaxilla*. These colour differences hold for all sub-species of both doves throughout the entire distribution range.

Personal experience with both doves during field work in French Guiana and Surinam, proves that the two colour differences described above, are decisive in identifying White-fronted and Grey-fronted Doves in the field.

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### Summary

White-fronted (*Leptotila verreauxi*) and Grey-fronted (*Leptotila rufaxilla*) Doves are generally sympatric in the South American part of their distribution range. Both species have a very similar appearance and behaviour and are difficult to separate in the field.

From personal field experience with both doves in French Guiana und Surinam, and from investigations of specimens in the British Museum (Natural History) (Tring, England) and the Rijksmuseum von Natuurlijke Historie (Leiden, Holland), I conclude that two external characters i. e. the colour of the bare loral and orbital skin

and the colour pattern of the upper head, are decisive in separating White-fronted and Grey-fronted Doves in the field.

The bare lore and eye region is bluish in *L. verreauxi* and reddish in *L. rufaxilla*, and the upper head is pinkish brown in *L. verreauxi* and whitish grey in *L. rufaxilla*. These colour differences hold for all sub-species throughout the entire distribution range of both species.

### Zusammenfassung

Die Blauringtaube (*Leptotila verreauxi*) und die Rotachseltaube (*Leptotila rufaxilla*) leben sympatrisch in ihrem südamerikanischen Verbreitungsgebiet. Im Habitus und im Verhalten entsprechen sich beide Arten und sind folglich nur schwer feldornithologisch zu unterscheiden.

Untersuchungen, sowohl im Freiland (Guiana und Surinam), als auch an Museumsbälgen, zeigen, daß beide Arten anhand ihrer Hautfärbung der Zügel- und Augenregion unterscheiden werden können. Diese Körperpartie ist bei *L. verreauxi* bläulich und bei *L. rufaxilla* rötlich. Ferner ist der Oberkopf von *L. verreauxi* rotbraun und der von *L. rufaxilla* grau-weiß. Diese Farbunterschiede können bei allen bisher bekannten Subspezies beider Arten beobachtet werden.

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